

Other Time and Frequency Resources

For those who want to learn more, here is a list of time and frequency related reading material.

Time and Frequency Books

Two excellent general interest books on time and frequency are:

- Tony Jones, *Splitting the Second: The Story of Atomic Time*, Institute of Physics Publishing, 199 pages, 2000.
- James Jespersen and Jane Fitz-Randolph, *From Sundials to Atomic Clocks: Understanding Time and Frequency*, Dover Publications, 308 pages, 1999.

An excellent historical reference is:

- Derek Howse, *Greenwich Time and the Longitude*, Philip Wilson Publishers, Ltd., London, 199 pages, 1998.

Two more advanced books (but still very readable) are:

- F. G. Major, *The Quantum Beat: The Physical Principles of Atomic Clocks*, Springer-Verlag, 475 pages, 1998.
- Claude Audoin and Bernard Guinot, *The Measurement of Time: Time, Frequency, and the Atomic Clock*, Cambridge University Press, 335 pages, 2001.

General Metrology Books

Two good general calibration references, each with a small section on time and frequency:

- Fluke Corporation, *Calibrations: Philosophy in Practice*, 1994.
- ASQ, *The Metrology Handbook*, 2004.

A huge book with chapters covering nearly every field of measurement:

- John Webster, editor, *The Measurement, Instrumentation, and Sensors Handbook*, CRC Press, 2608 pages, 1999.

A very readable, useful book on test equipment and measurements:

- Joseph Carr, *Elements of Electronic Instrumentation and Measurement*, Prentice-Hall, 594 pages, 1996.

A classic, easy-to-read book on measurements and data analysis:

- W. J. Youden, *Experimentation and Measurement*, NIST Special Publication 672, 179 pages, 1969.

Technical Papers available on World Wide Web

- Over 2000 technical papers are now available as PDF files on the NIST Time and Frequency division web site. These papers include nearly everything published by NIST about time and frequency since 1955, and older papers dating back as far as 1914. All papers can be downloaded free of charge using the Adobe Acrobat Reader. The publication database is located at:

<http://tf.nist.gov/general/publications.htm>

- *Time and Frequency Users Manual*, NIST Special Publication 559, 1990

<http://tf.nist.gov/general/pdf/461.pdf>

- *Characterization of Clocks and Oscillators*, NIST Technical Note 1337, 1990

<http://tf.nist.gov/general/pdf/868.pdf>

- *Fundamentals of Time Interval Measurement* (HP App Note 200-3)

<http://cp.literature.agilent.com/litweb/pdf/5965-7663E.pdf>

- *Understanding Frequency Counter Specifications* (HP App Note 200-4)

<http://cp.literature.agilent.com/litweb/pdf/5965-7664E.pdf>

- *The Science of Timekeeping* (Agilent App Note 1289)

<http://cp.literature.agilent.com/litweb/pdf/5965-7984E.pdf>

Web Sites

- NIST Time and Frequency Division

<http://tf.nist.gov/>

- United States Naval Observatory (USNO) Time Services Division

<http://tycho.usno.navy.mil/>